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BRIEF NOTES ON THE DISTRIBUTION OF HEPATICAE

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I. LOPHOZIA KAURINI (Limpr.) Steph.

Just before the issue of the March (1911) BRYOLOGIST containing the excellent drawings of *Lophozia Kaurini* by Miss Lorenz, a few plants were found in a specimen of *Preissia quadrata* collected at Apostle Islands, Ashland Co., Wisconsin, in May, 1902, by Prof. C. E. Allen of the University of Wisconsin. These plants were determined by Dr. Evans as *Lophozia Kaurini*.

A little later, in examining the material collected by the writer Oct. 3, 1910, at Black River, near Superior, Douglas Co., Wisconsin, good fruiting plants of this beautiful and rare species were again observed. In this instance also, it grew associated with *Preissia quadrata*, on high wet rocks along the side wall of the stream half way up the falls. The plants collected here as well as those from Apostle Islands dry a dark brown, the leaf cells are large, with large trigones, and the leaves show blunt lobes as in the specimens collected by Miss Lorenz. The plants were fruiting and plainly paroicous and the large fully developed barrel-shaped perianth, contracted into a long beak and ciliated at the mouth, is a striking object even under a simple lens.

The leaf cells when dry have a glistening appearance not unlike *Calypogeia Trichomanis*, except that the cell outlines are here dark and brown, instead of yellowish white. A week later while examining Prof. Allen's material from Isle Royale, Lake Superior, collected during the summer of 1901, the writer again found the species, this time mostly in a sterile condition. It would be interesting in view of the later facts concerning *Lophozia badensis*, *Lophozia Kaurini* and *Lophozia Muelleri* to examine all the *Lophozia Muelleri* material in the various herbaria. The writer would also suggest a close scrutiny of all the *Preissia quadrata* specimens, as it is a very commonly associated species.

Apostle Islands are about 75 miles east of Superior, Wis., on the south shore; Isle Royale is about 200 miles northeast on the north shore of Lake Superior. These three localities make a third regional station for *Lophozia Kaurini* for North America, the other two being Yukon and Vermont.

Two allies of *Lophozia Kaurini*, viz.—*Lophozia Muelleri* and *Lophozia heterocolpa* (the *Jungermannia Wattiana* of Gray's Manual)—occur in the Duluth-Superior district. Sterile forms of *Lophozia Kaurini* might easily be mistaken for *Lophozia heterocolpa*, which is very common along all the rocky waterways. The former, however, is a much larger plant. *Lophozia heterocolpa* occupies in size an intermediate position between *Lophozia Kaurini* and the dioicous *Lophozia Muelleri*. It has the same brown color when dry, but is more

dull in appearance. It is readily distinguished by its upright gemmiparous branches, rarely absent, bearing masses of gemmae on large-celled, strangely modified, three ranked leaves. *Lophozia heterocolpa* is also dioicous, although its fruits so rarely that out of hundreds of collections of this plant carefully searched, only one perianth has been found. *Lophozia Kaurini* and *Lophozia Muelleri* fruit freely in this district. II. LOPHOZIA BAUERIANA Schiffn.

Dr. Evans has fully described this species in his Notes on New England Hepaticae (Rhodora **10**: 188. 1908). At that time the species had been recorded from Arctic America (Greenland, Ellesmere Land, and North Lincoln) by Bryhn, and from one New England station, at Little Saddleback Mountain, Franklin Co., Maine (Chamberlain and Knowlton). Since then Dr. Evans has received specimens from Cape Caribou, Bic, Rimouski Co., Quebec (J. F. Collins, 5108, July 22, 1907); Pipestone Creek, Atha. (J. Macoun, 57, June 30, 1904); Lake O'Hara, B. C. (J. Macoun, 42, Aug. 10, 1904).

Lately the plant has been sent to the society herbarium, from four other localities so widely separated, that it is evident that the distribution of the species is much more extensive than was formerly supposed. The new stations are:—

Sisson, Cal. (George M. Pendleton);
Glacier National Park, Montana (John M. Holzinger);
Rigaud, Quebec (Prof. H. Dupret);
Glacier, B. C. (C. C. Kingman).

The plants in each of these collections show the distinguishing marks of the species, which are as follows:—

The plants are intermediate in size between *Lophozia Floerkei* and *L. lycopodioides*; the underleaves are sparingly ciliated, the lobes of the leaves are often four instead of three, and apiculate instead of blunt as pertains to *L. Floerkei*. The lobes of the leaves often end in a sharp bristle-like point, similar to those of *L. lycopodioides*, but the leaves lack the size, breadth, fluted, crisped, and ciliated condition of the leaves of that species. The plants of *L. Baueriana* are generally freely gemmiparous, unlike most of the other species of the *barbata* group (*Barbilophozia*), to which it belongs. *L. attenuata* (Mart.) Dumort. is of course an exception, but bears its gemmae on upright shoots of closely appressed modified leaves. It is of interest to note that Dr. Karl Müller⁽¹⁾ combines *L. Baueriana* Schiffn; *Jungermannia Hatcheri* Evans, an Antarctic species from Patagonia; *Barbilophozia Hatcheri* (Loeske); and similar plants of other authority, under the name of *Lophozia Hatcheri* (Evans) Stephani. It is by this name that the species will probably be known. It has a wide European distribution, and the collections reported here also show a considerable range for North America.

(1) Rabenhorst's Kryptogamen-Flora, **6**: 631-2.